

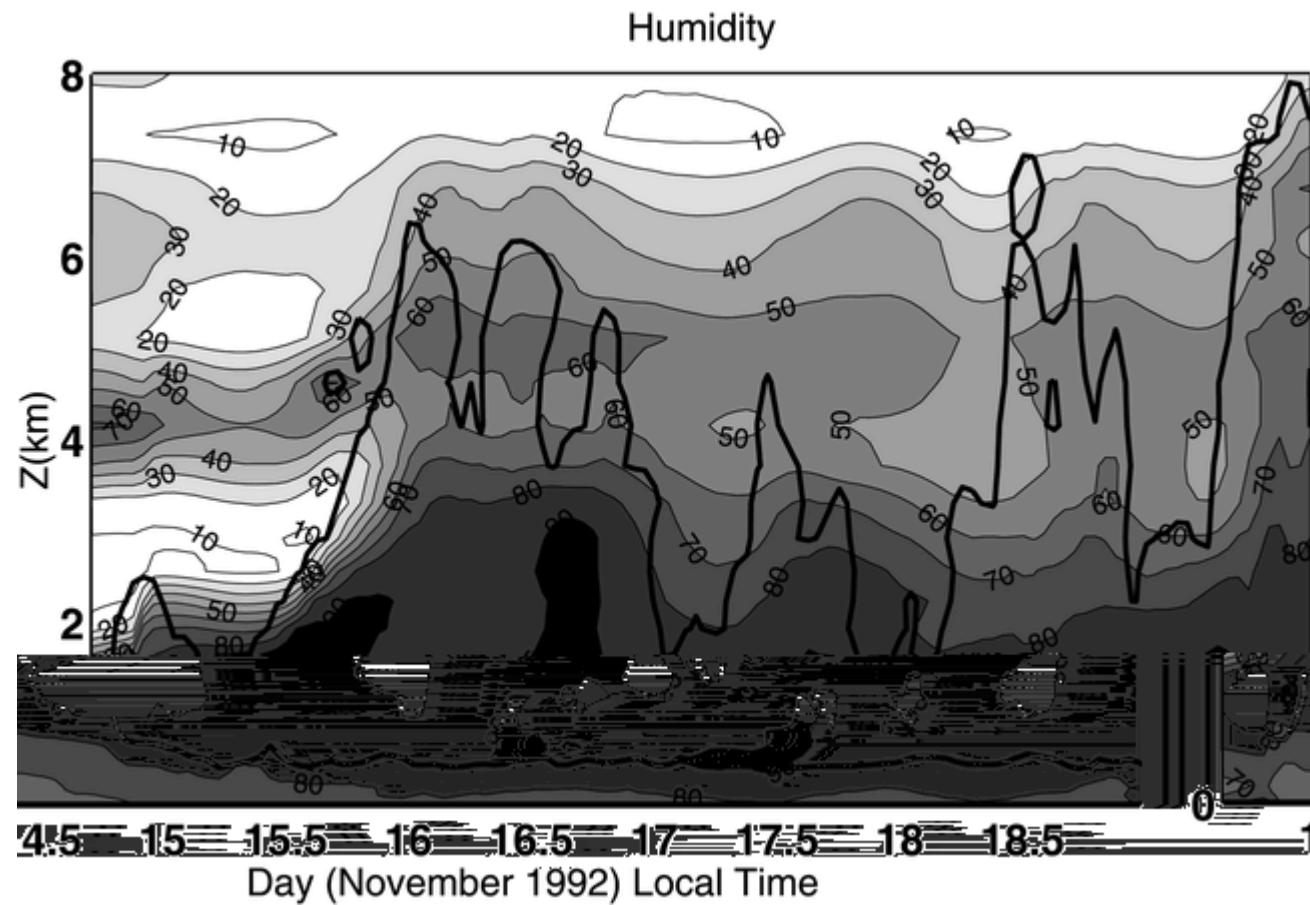
TOGA-COARE DISCUSSION

- SCIENCE THEMES
- INTEGRATIONS DETAILS

Cloud Top Height during suppressed conditions

- J.-L. Redelsperger, D. B. Parsons and F. Guichard. 2002: **Recovery Processes and Factors Limiting Cloud-Top Height following the Arrival of a Dry Intrusion Observed during TOGA COARE.** *Journal of the Atmospheric Sciences*: Vol. 59, No. 16, pp. 2438–2457.

Cloud top heights in suppressed stage from a CRM

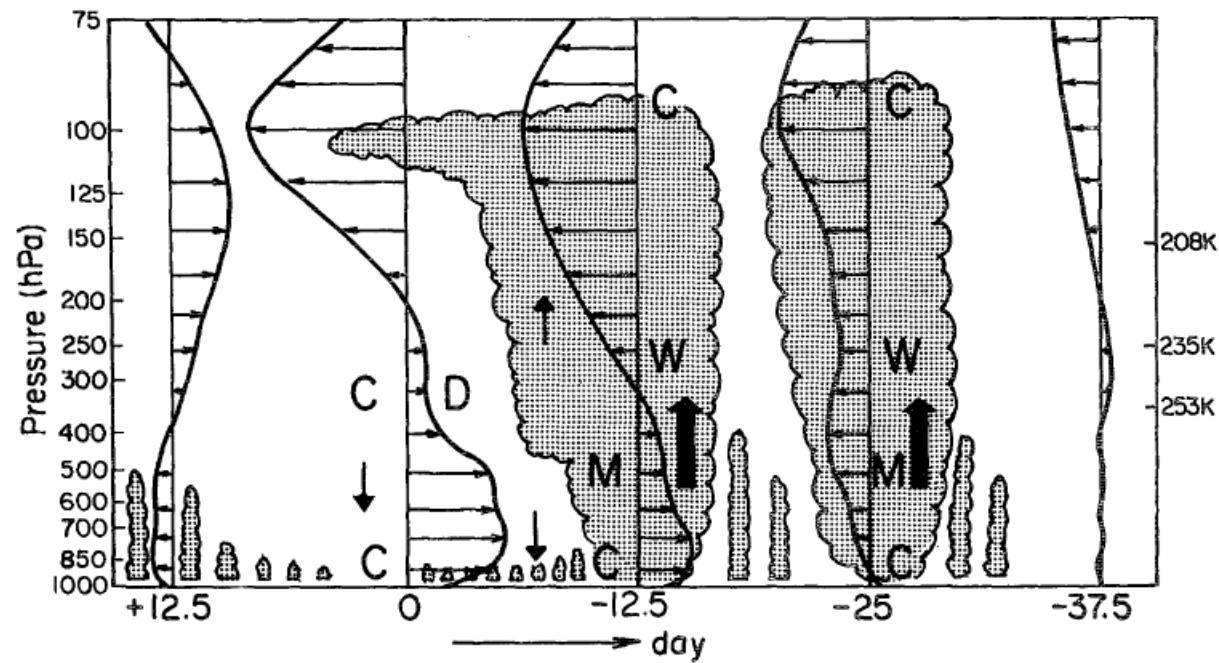


Xin Lin and Richard H. Johnson. 1996: Kinematic and Thermodynamic Characteristics of the Flow over the Western Pacific Warm Pool during TOGA COARE. *Journal of the Atmospheric Sciences*: Vol. 53, No. 5, pp. 695–715.

1 MARCH 1996

LIN AND JOHNSON

711



Surface Fluxes Enhanced after Active phase of MJO (~Jan 1) (e.g. westerly wind bursts)

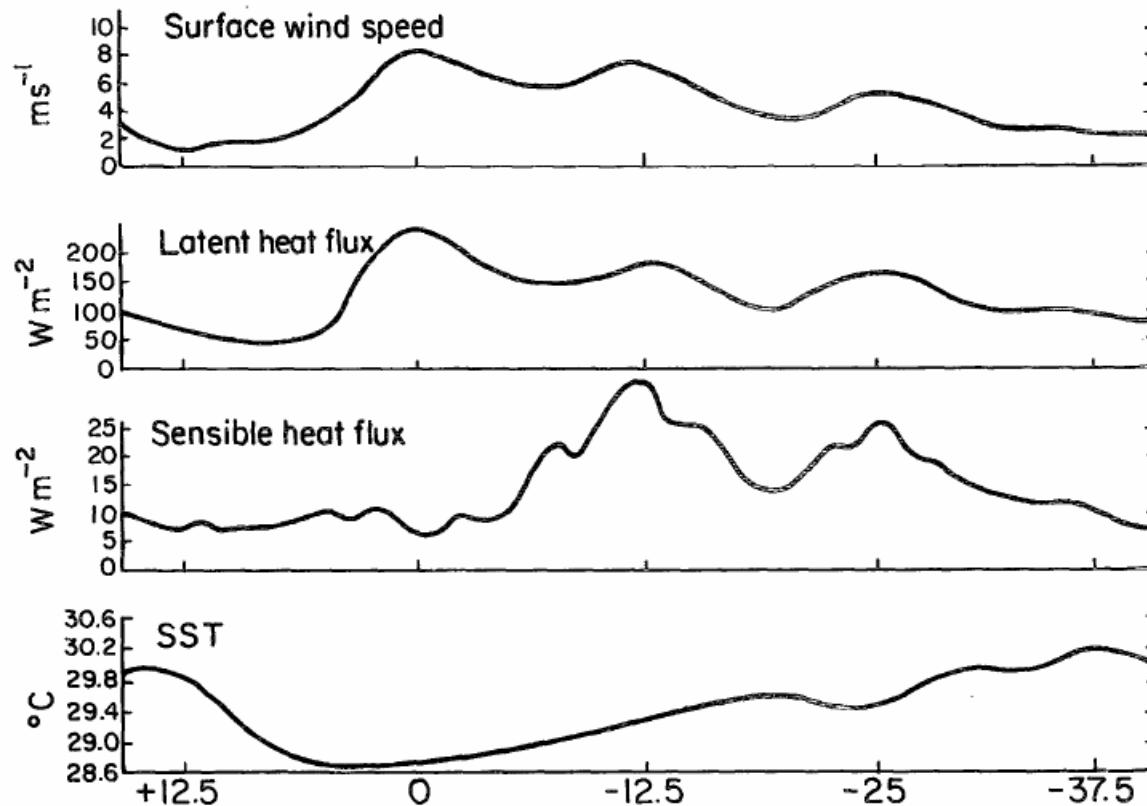
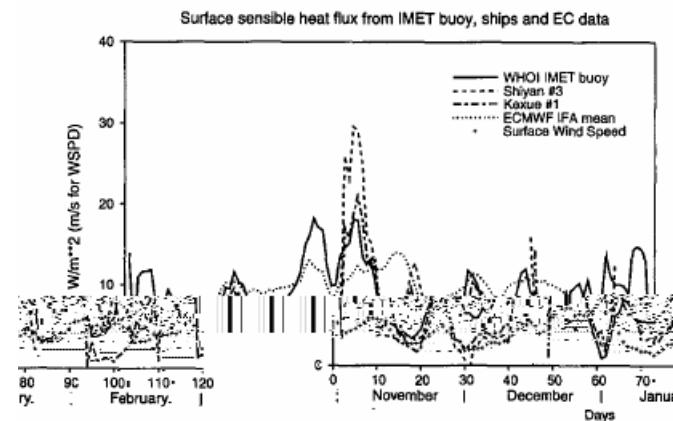
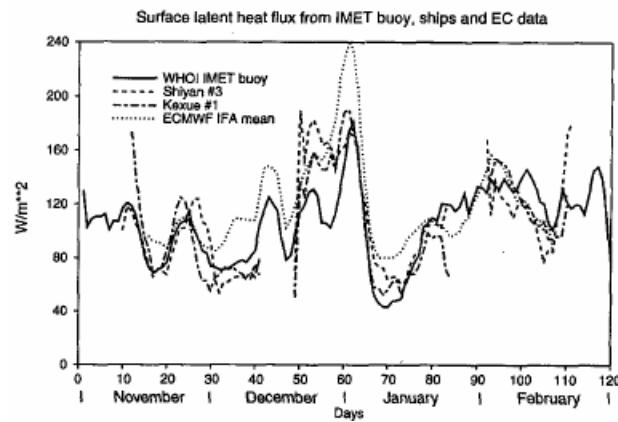
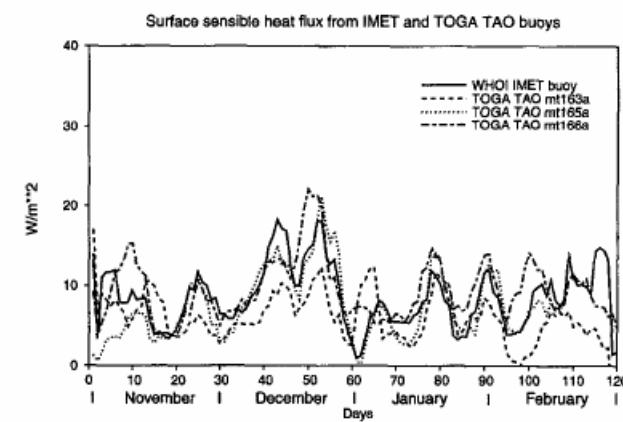
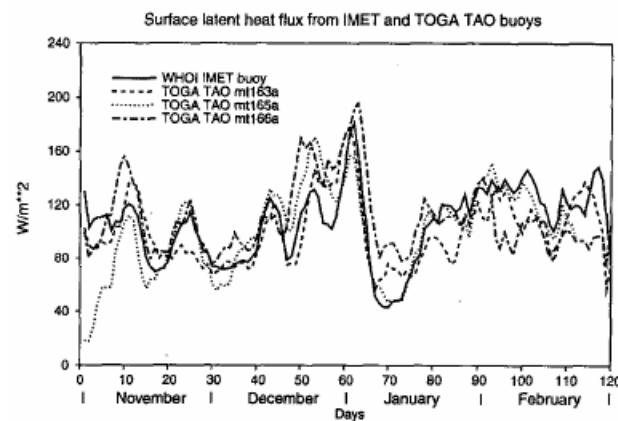
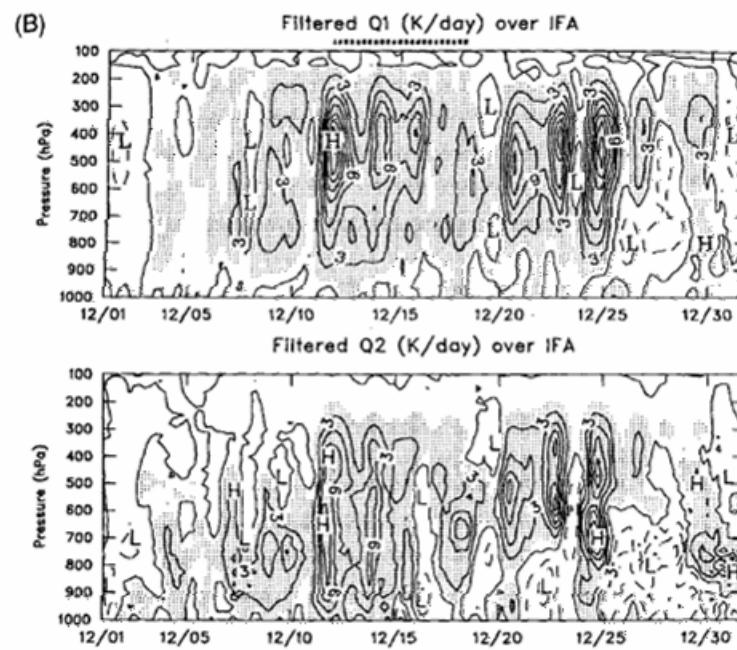
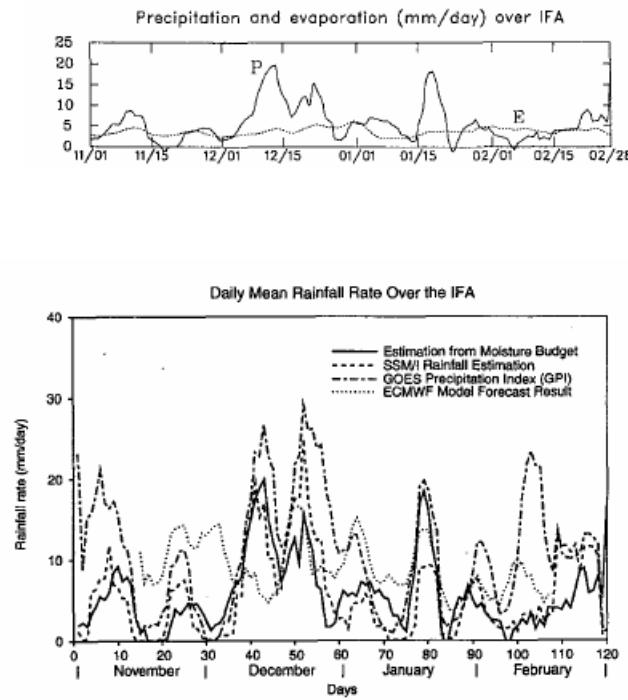


FIG. 16. A descriptive model of the kinematic, thermodynamic, and surface properties of the December to early January westerly wind burst as it passed the IFA. Day 0 is time of maximum low-level westerlies, with earlier times indicated by negative days (placed to the right so that the left portion of the diagram is to the west: see caution in text, however, about fully interpreting diagram as west–east section). Letters in figure refer to anomalies W: warm, C: cool, M: moist, and D: dry. Heavy arrows indicate strong vertical motion; light arrows weak vertical motion. Clouds are schematic, horizontal scales exaggerated. Temperatures corresponding to pressure levels are indicated on right.

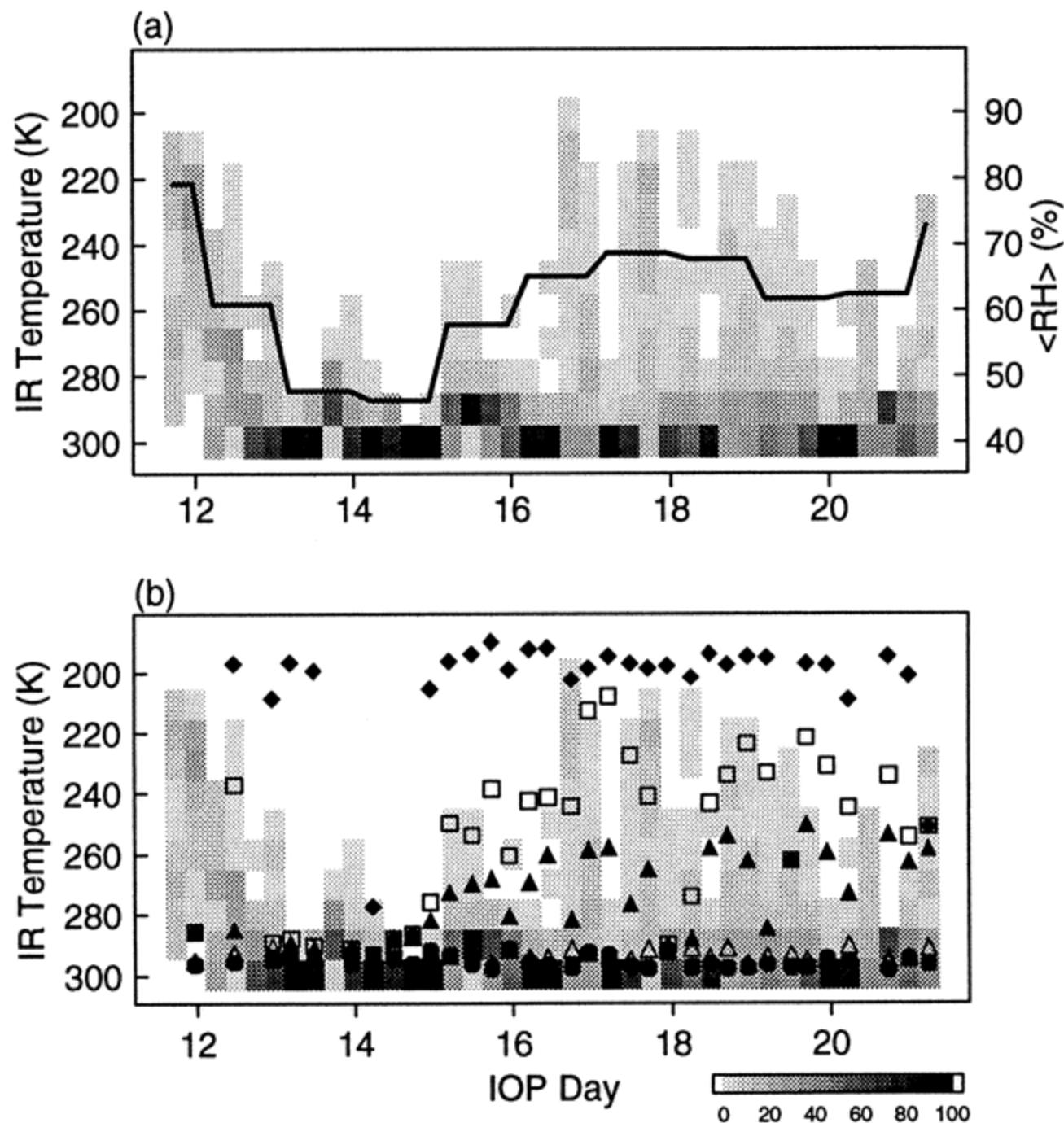
Xin Lin and Richard H. Johnson. 1996: Heating,
Moistening, and Rainfall over the Western Pacific
Warm Pool during TOGA COARE. *Journal of the
Atmospheric Sciences*: Vol. 53, No. 22, pp. 3367–3383.



Surface Precipitation and Q1/Q2 budget



- Randy G. Brown and Chidong Zhang.
**1997: Variability of Midtropospheric
Moisture and Its Effect on Cloud-Top
HeightDistribution during TOGA
COARE***. *Journal of the Atmospheric
Sciences*: Vol. 54, No. 23, pp. 2760–
2774.



TOGA-COARE Science Recap

- Assess and understand differences between simulations of the heating/moistening profiles in different phases of the MJO
- Evaluate the simulation of surface fluxes and surface wind speed in relation to phases of the MJO
- Evaluate the radiation and cloud top height simulation in different phases of the MJO

- Advection versus MJO phase
- 10 day forecasts – can we see the evolution of the MJO? Of our different configurations of the model, which permit the most robust MJO evolution? Contrast 1 day versus 10 day forecast.
- Wind, Dry intrusions, vertical motion – somebody plot t-z evolution of ERA40 over the IFA against Johnson/Zhang analysis, evolution of monthly SST (and surface fluxes) over IFA in ERA 40
- Monthly – weekly SST product ...what is its SST evolution compared to in-situ obs? (Reynolds vs Japanese?)

Integration Details

- SCM vs CAPT integrations
- Sensitivity studies
 - Spectral dynamics versus finite volume
 - Resolution: T42 versus T85
 - Convection formulations: Zhang modifications, Xie modification, Emanuel
 - Impact of X. Wu cumulus momentum transport
 - Impact of Bretherton PBL scheme (and vertical resolution)
 - GFDL AM2 simulations: Relaxed-Arakawa-Schubert versus Donner convection

Baseline Integration

- 00Z once a day – 10 day integration
- 1 November 1992 – end of TOGA COARE Active phase (Feb 1 ?? March 1 1993)
- 2 or 3 month forecast every 15 days
- Output- 3 x 5 MOLTS array (Shaocheng to confirm)
- Global Output - precip, total cloud (isccp – 49 cloud types), olr - pentad, surface pressure, t_ref, 200, 500Z, 850Z, (T,u,v,q, RH) 6 hourly – 3 hourly – (precip data set????) -